ABSTRACT OF THE DISCLOSURE

A method and apparatus if disclosed which may comprise a high power high repetition rate gas discharge laser UV light source which may comprise: a gas discharge chamber comprising an interior wall comprising a vertical wall and an adjacent bottom wall; a gas circulation fan creating a gas flow path adjacent the interior vertical wall and the adjacent bottom wall; an in-chamber dust trap positioned a region of low gas flow, which may be along an interior wall and may comprise at least one meshed screen, e.g., a plurality of meshed screens, which may comprise at least two different gauge meshed screens. The dust trap may extend along the bottom interior wall of the chamber and/or a vertical portion of the interior wall. The dust trap may comprise a first meshed screen having a first gauge; a second meshed screen having a second gauge smaller than the first gauge; and the second meshed screen intermediate the first meshed screen and the interior wall. The chamber may comprise a plurality of dust collecting recesses in at least one of the vertical interior wall and the bottom wall of the chamber which may be selected from a group comprising a one-part recess and a multi-part recess, which may comprise two sections angled with respect to each other. The dust trap may comprise a pressure trap positioned between a portion of a main insulator and an interior wall of the chamber. The chamber may comprise a gas circulating fan comprising a cross-flow fan with a fan cutoff that may comprise a vortex control pocket. The chamber may comprise a preionization mechanism comprising a preionization tub containing a ground rod within an elongated opening in the preionization tube that may comprise a compliant member, an automatic preionization shut-off mechanism, a preionization onset control mechanism and/or a focusing element. The chamber may comprise an elongated baffle plate that may comprise a plurality of pyramidal structures including varying numbers of generally pyramidal elements and oriented in groups of varying numbers of generally pyramidal elements and oriented along and transverse to the longitudinal axis. Acoustic resonances within the chamber may also be reduced by introducing an artificial jitter into the timing of the laser discharges varying the inter-pulse period randomly or in a repeating pattern from pulse to pulse within a burst.